

New TMDL Projects Begin

Section 303(d) of the Clean Water Act (CWA) and accompanying EPA regulations require states to identify surface waters (e.g., lakes and rivers) that do not meet water quality standards and to develop plans for cleaning them up. Known also as the Total Maximum Daily Load (TMDL) Program, Section 303(d) provides a process for determining pollution budgets for the nation's waters that, once implemented, will ensure Clean Water Act goals will be met.

When a state prepares its list of waters needing TMDLs, it is required to prioritize waterbodies for TMDL development. A state also must identify the waterbodies that will be targeted for TMDL development within the next two years.

The 2002 TMDL list for North Dakota, recently approved by EPA, includes 48 lakes and reservoirs totaling 517,782 acres, and 132 river and stream segments totaling 4,594 miles.

Several new TMDL projects from the 2002 list have been initiated recently: Armourdale Dam, Carbury

Dam, Northgate Dam, Blacktail Dam and McGregor Dam.

Armourdale Dam is located in northwestern Towner County in the Red River of the North basin. It was created in 1961 for the purpose of recreation. The dam, which has a maximum depth of 36 feet, covers 80 acres and drains a watershed of 7,700 acres.

Nutrient enrichment, sedimentation, and low dissolved oxygen are believed to be the causes of water quality impairment in Armourdale Dam. In its *1993 Lake Water Quality Assessment Report*, the North Dakota Department of Health (NDDoH) described the reservoir as "hypereutrophic."

Eutrophication is the process by which lakes are enriched with nutrients, increasing the production of



Armourdale Dam

aquatic plants and algae. The extent to which this process has occurred is reflected in a lake's trophic status: oligotrophic (nutrient poor), mesotrophic (moderately productive) and eutrophic (very productive, fertile).

The primary goal of the project is to collect data for the development of both sediment and nutrient reduction targets for Armourdale Dam. If implemented, these targets, in the form of a TMDL, will help to improve the lake's trophic status and enhance

(TMDL Projects...cont. on page 2)

its beneficial uses for recreation, fishing and water supply.

To develop the TMDL, water samples will be collected and analyzed from three stream sites and three reservoir sites during the winter of 2002-2003 and the spring, summer and fall of 2003.

Carbury Dam is located in northeastern Bottineau County in the lower Souris River basin. It was created in 1982 for the purposes of flood control, recreation and wildlife enhancement. The dam has an average depth of 9 feet and a maximum depth of 25 feet. The reservoir has a surface area of 130 acres and drains a watershed of 11,520 acres. The reservoir is hypereutrophic.

Nutrient enrichment is believed to be the cause of water quality impairment. Runoff from concentrated livestock feeding areas is another source of nonpoint source pollution

within the watershed. This source may be the most significant due to its proximity to the actual drainage area and capability to deliver a highly concentrated loading.

The primary goal of this project is to collect data for the development of a nutrient TMDL for Carbury Dam that, if implemented, will help to improve the lake's trophic status and improve its beneficial uses for recreation, fishing and water supply.

Water samples will be collected and analyzed from three stream sites and one reservoir site during the winter of 2002-2003 and the spring, summer and fall of 2003.

Northgate Dam is located in northeastern Burke County in the Des Lacs watershed of the Souris River basin. It was created in 1968 for the purpose of recreation. The reservoir has an average depth of 8.8 feet and a maximum depth of 25

feet. The reservoir covers 150.8 acres and drains a watershed of 28,160 acres. The reservoir was assessed as highly eutrophic in the *1993 Lake Water Quality Assessment Report* (NDDoH).

Nutrient enrichment and low dissolved oxygen are believed to be the cause of water quality impairment. Nonpoint source pollution from the surrounding watershed accounts for nearly all of the nutrient loading and pollution discharges into Northgate Dam. Runoff from concentrated livestock feeding areas also results in nonpoint source pollution.

The city of Flaxton's wastewater lagoons are the only point source discharge in the watershed.

Northgate Dam experienced fish kills in the summer of 1972, winter of 1980-1981 and summer of 1983. Investigations indicated they were caused by chemical pollutants, low water levels and a combination of heat stress and cyclic bloom/die-off of algae.

The primary goal of this project is to collect data for the development of a nutrient TMDL for Northgate Dam that, if implemented, will help improve the lake's trophic status and its beneficial uses for recreation, fishing and water supply. Water samples will be collected and analyzed from two stream sites and one reservoir site during the winter of 2002-2003 and the spring, summer and fall of 2003.



Carbury Dam

RC&Ds Award Scholarships for Winning Essays

The following three essays were written by winners of water quality scholarships offered by Dakota Prairies Resource Conservation and Development and Dakota West Resource Conservation and Development. The RC&Ds jointly offer a scholarship program to participating organizations of the Southwest North Dakota Water Quality Education 319 Program. The participating organizations will establish an essay topic each year and provide scholarships to the winning high school seniors who plan to enter college in the near future.

Scholarships are provided on a competitive basis to students who research and write essays with the water quality theme chosen by the participating organization. Since the inception of the scholarship program in July 2000, about 140 essays have been written. Scholarships ranging from \$100 to \$500 have been awarded to 14 youth from the 18 counties served by the RC&Ds in southwest North Dakota.

This activity continues to grow each year, creating an increased awareness and understanding of water quality issues.

What Does Water Quality in Emmons County Mean to You?

by Brent Weber

Emmons County Soil Conservation District

Water is not only a valuable resource, it is a valuable commodity as well. Water is the lifeblood of any successful venture whether it be crop production, livestock production, manufacturing, recreation or municipal use. Good, clean water is a necessity!

I believe that many times we in Emmons County take our water resources for granted ... especially the quality and quantity of the water available to us. I remember when I lived next to Beaver Creek, and there was a flood caused by snow and rain. I remember watching tires, wire, car parts, fence posts, empty barrels and cattle waste float by the house we lived in. I remember fishing in that same creek. I did not think fish could live in dirty water like that. The creek flowed into a river, and that river flowed into another river and all the objects I saw floating by went right with the water. I remember the water shooting out of the well in our house during the flood, and I am sure it was the same water floating by with all the debris in it. I also remember taking a bath in water from that well, and the water was rusty enough that I could not see the bar of soap in the bathtub. It did not seem like a big deal at the time, but now I sure would not want to use that water again.

I use the water every summer for water sports and fishing. I can't bear to think how sad it would be not to have access to water that is clean enough to swim in, water ski on, and catch fish from. I have spent many hours fishing with my family, and I cannot imagine not having a quality body of water to fish in. I now realize how important every little stream, creek and watershed that flows into these areas are. If we do not take care of the water going into these areas, the water cannot help take care of us.



(Essays...cont. on page 4)

What Does Water Quality in Emmons County Mean to You?

by DelRae Hulm

Emmons County Soil Conservation District

Water quality does mean a lot to me. Quality water to me means good water for us to drink and use in our everyday lives. Without water, life would be nonexistent. Water quality is very important to me. People must consume water every day. If the water that we drink were not good quality, people would get very sick or maybe even die. Humans, plants and animals or any living thing as we know it would not be living healthy today if we did not have good quality water. Therefore, water quality affects our everyday lives.

I think that I take our water quality for granted. We get our water from a well on our farm. Our well water tastes a lot better than the water in town. The town water has so many chemicals in it and is bad for the community's health. Most people have to purify their water before they drink it because of the harsh chemicals that are in it.

We need to be thankful that we live in an area where the quality of water is quite good. Most of our lakes, streams, springs and wells have good quality water for people to use. We don't have big industries or highly populated areas that would pollute our waters. I believe we do have some water pollution problems in Emmons County but I don't think they are a big threat to human life. I think we need to keep people educated on how important it is to keep our water uncontaminated. This would help to eliminate water pollution and maintain our water quality in Emmons County.

Water Quality Essay

by Andrew Porsborg

Oliver County Soil Conservation District

How will water quality affect me in the future? Water quality is improving due to treatment plants and water conservation. Water quality is a must. We will constantly need clean water to drink and to survive in this world. Water quality will be important to me, seeing that I am aiming for a career in agriculture. So, if the soil is contaminated with polluted water, the farming industry will be in trouble. With that, I would be out of a job.

With poor water, plants and crops will fail to grow and yield. Farmers will be forced to try other irrigation techniques. If water quality decreases enough to affect the production of crops, we will also be forced to find different food sources. Also, animals drinking from a polluted creek or other water sources will be affected (e.g., the quality of meat).

If the water is not safe for the animals to drink, what about us? What will we do when the water becomes unsafe for human consumption? We will be forced to boil or distill any water we use for our own use. Many farmers use chemicals that are harmful to the environment and, if they are collected in a water source, the effects can be devastating. Sprays that farmers use on their crops can kill organisms in the water. Fertilizer can cause the overproduction of certain plants which can alter the ecosystem. Not only do the chemicals pollute, but animals do as well. Animal waste can also contaminate water and make it unsafe for human consumption and kill off wildlife. Feedlots are forced to practice certain conservation techniques by state and federal laws. It is kind of ironic that this animal waste that can help improve soil quality can be so devastating on the water system.

(Essays...cont. from page 4)

People are so busy with their everyday lives that they take clean water for granted. Most people just don't appreciate the clean water that comes from their showers every morning. It is such a common luxury people don't realize that, if water isn't conserved, it won't be around long. If people still had to go to a well to get water, it would probably be used more sparingly.

A lot of people think that water pollution occurs in the oceans, rivers and lakes, but pollutants also soak into the water table and contaminate many wells. If underground water becomes contaminated, rural residents will be forced to install smaller water treatment facilities or connect to the city water line -- either way costing people a lot of money.

Water contamination isn't easy to fix, but we can save the water we have. If the agricultural community could come up with some environmentally safe fertilizer and spray we would be better off. Classes are offered to help farmers and ranchers conserve the water around their land. Lagoons are put in place to catch contaminated runoff from corrals. Water treatment plants can be set up to treat the already-contaminated water and make it safe again.

New state laws and regulations can be put in place to help conserve water. The North Dakota Game and Fish Department also can play a big part in the conservation of water. They can promote the importance of water quality on the wildlife. The most important part in soil conservation is "everyone." Everyone that uses water can help to conserve water and improve water quality.

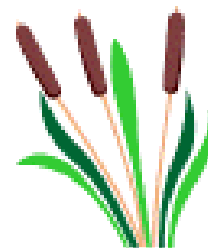
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(TMDL Projects...cont. from page 2)

McGregor Dam is located in the northeast corner of Williams County, one mile south of McGregor, N.D. Completed in 1969, the reservoir covered 54.3 acres with a maximum depth of 37 feet and an average depth of 13.7 feet. It was created for the purposes of recreation and wildlife enhancement.

McGregor Dam and its contributing watershed have a combined surface area of 5,492 acres.

McGregor Dam is listed in the North Dakota 2002 TMDL Section

303(d) list as impaired for recreation use. The cause of the impairment is believed to be nutrient enrichment.

Survival of the fishery is precarious due to low dissolved oxygen levels in the winter. Nutrient loading from the highly fertile watershed and from internal nutrient cycling are possible contributing factors to the oxygen depletion. Currently, the reservoir is considered hypereutrophic.

The primary goal of this project is to collect data for the development of nutrient and sediment TMDLs for

McGregor Dam that, if implemented, will help to improve the lake's trophic status and its beneficial uses for recreation, fishing and water supply.

Blacktail Dam is located in Williams County in the northwestern part of North Dakota 17 miles north and 5 miles west of Williston, N.D.

The draft 2002 TMDL list identifies aquatic life and recreation uses as "fully supported but threatened" as a result of low dissolved oxygen, sedimentation and excessive nutrient

(TMDL Projects...cont. on page 6)

(TMDL Projects...cont. from page 5)

enrichment. Blacktail Dam has been assigned a high priority TMDL ranking.

Blacktail Dam was constructed in 1959 by the Williams County Park Board, State Water Commission and North Dakota Game & Fish Department. At the time of construction, the reservoir covered 160 acres with an average depth of 17 feet and a maximum depth of 40 feet. Currently, the reservoir is eutrophic bordering on hypereutrophic.

The primary goal of the project at Blacktail Dam is to collect data for the development of sediment and nutrient TMDLs for Blacktail Dam. If implemented, these TMDLs will help to improve the lake's trophic status and its beneficial uses for recreation and fishing.

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North Dakota Department of Health NPS Website On-line

The North Dakota Department of Health has added a website to address nonpoint source pollution topics.

To get more information on NPS subjects or to view past issues of the *Quality Water* newsletter, go to:

<http://www.health.state.nd.us/ndhd/envIRON/wq/nps/>



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